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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/696,826	10/25/2000	William M. Clark, Jr.	B-3650 617089-5	4721

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EXAMINER

TRAN, THIEN F

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 08/27/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/696,826

Applicant(s)

CLARK, JR. ET AL.

Examiner

Thien F Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 15-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 1-8, 15-17 and 19-22 is/are rejected.
- 7) ☒ Claim(s) 18 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 22 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear and indefinite to claim each buried conducting channel providing an electrical connection between said selected ones of the plurality of spaced-apart regions in claim 19, but in dependent claim 22 claiming otherwise that said selected ones of the plurality of spaced-apart regions are not electrically connected by one of said plurality of buried conducting channels.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi (USPN 6,215,158).

Choi discloses an interconnection structure (Figs. 1-4 and 5B) for interconnecting two spaced-apart doped regions (140, 150) of a common conductivity type (n-type) in a device comprising a first doped region (130, 231, 232) in the device forming a conducting channel between the two spaced-apart doped regions, the conducting

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channel being of the common conductivity type (n-type) and bridging a region between the two spaced-apart regions (140, 150); and a second doped region 121 of opposite conductivity type (p-type) in the device, the second doped region 121 being disposed between the two spaced-apart doped regions (140, 150) of common conductivity type and overlying the portion 130 of the conducting channel.

The recitations "a camouflaged interconnection" and "in a manner which inhibits reverse engineering thereof" in the claim preamble specify an intended use or field of use is treated as nonlimiting since it has been held that in device claims, intended use must result in a structural difference between the claim invention and the prior art in order to patentably distinguish the claim invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963). A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). It is clear that Choi discloses the same interconnection structure as claimed wherein a second doped region 121 is formed above the first doped region 130. As a result, what is true in the present invention is also true in the Choi reference. The second dope region 121 of Choi inherently camouflages the buried interconnect 130 and inhibits reverse engineering.

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Regarding claims 2 and 6, the second doped region 121 overlying the conducting channel 130 has a larger area, when view in a direction normal to a major surface of the device, than has the conducting channel.

Regarding claims 3 and 7, the two spaced-apart doped regions (140, 150) form source contacts, respectively of two separate field effect transistors.

Regarding claims 4 and 8, the second doped region 121 is provided in the device over regions (530) having no conducting channels formed therein.

Regarding claim 5, Choi also discloses further interconnect of the first and second source regions to other parts of the semiconductor and using an interconnect layer interconnecting drain regions together. Therefore, Choi discloses a plurality of interconnects each interconnecting selected doped regions of the plurality of spaced-apart doped regions, each interconnect comprising a buried conducting channel bridging a region between the selected doped regions. The doped region 121 is disposed over the plurality of interconnects. As a result, it inherently camouflage the majority of the plurality of interconnects.

Claims 15-17 and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi (USPN 6,215,158).

Choi discloses an interconnection structure (Figs. 1-4 and 5B) for interconnecting two spaced-apart doped regions (140, 150) of a common conductivity type (n-type) in a device comprising a first region (130, 231, 232) in the device wherein upper portions 231 and 232 of the first region are disposed laterally of and in direct contact with the two spaced-apart regions (140, 15), the first region being of the common conductivity type

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(n-type), the first region providing a buried conducting channel for the two spaced-apart regions; and a second region 121 of opposite conductivity type (p-type) in the device, the second region 121 being disposed between the two spaced-apart doped regions (140, 150) of common conductivity type and overlying the portion 130 of the first region.

The recitations "a camouflaged interconnection" and "in a manner which inhibits reverse engineering thereof" in the claim preamble specify an intended use or field of use is treated as nonlimiting since it has been held that in device claims, intended use must result in a structural difference between the claim invention and the prior art in order to patentably distinguish the claim invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963). A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). It is clear that Choi discloses the same interconnection structure as claimed wherein a second doped region 121 is formed above the first doped region 130. As a result, what is true in the present invention is also true in the Choi reference. The second dope region 121 of Choi inherently camouflages the buried interconnect 130 and inhibits reverse engineering. Choi also discloses interconnect of the first and second source regions to other parts of the semiconductor and using an interconnect layer to interconnect drain regions together. Therefore, Choi discloses a plurality of interconnects each

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interconnecting selected doped regions of the plurality of spaced-apart doped regions, each interconnect comprising a buried conducting channel bridging a region between the selected doped regions. The doped region 121 is disposed over the plurality of interconnects. As a result, it inherently camouflage the majority of the plurality of interconnects.

Regarding claims 16 and 20, the second doped region 121 overlying the conducting channel 130 has a larger area, when view in a direction normal to a major surface of the device, than has the conducting channel.

Regarding claims 17 and 21, the two spaced-apart doped regions (140, 150) form source contacts, respectively of two separate field effect transistors.

Regarding claim 22, Choi further discloses one other region 121 of p-type to the right of the second region 121 (Fig. 4), the one other region being laterally disposed of and in direct contact with selected ones of the plurality of spaced-apart regions (140, 150).

Response to Arguments

Applicant's arguments filed 05-31-02 have been fully considered but they are not persuasive. Applicant argues that the interconnect layer 130 of Choi is not the first implanted region in the device between the two spaced-apart regions. The examiner respectfully disagrees because the first region includes not only layer 130 but also layers 231 and 232 which are clearly between the two spaced-apart regions (140, 150).

Applicant also argues that the first region (130, 231, 232) of Choi is a multiple implanted regions which is not a first implanted region as is claimed in claim 1. The

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examiner respectfully disagrees with the remark. The claim limitation "a first implanted" is taken to be a product-by-process limitation which does not carry weight in claims drawn to structure. A product by process claim is directed to the product per se, no matter how actually made. See *In re Fessman*, 180 USPQ 324, 326 (CCPA 1974); *In re Marosi et al*, 218 USPQ 289, 292 (Fed. Cir. 1983); and particularly *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985), all of which make it clear that it is the patentability of the final structure of the product "gleaned" from the process steps, which must be determined in a "product by process" claim, and not the patentability of the process. See also MPEP 2113. Moreover, an old or obvious product produced by a new method is not a patentable product, whether claimed in "product by process" claims or not. In conclusion, the process limitation does not change or make the resulting product patentable distinguished over Choi.

Applicant further argues that region 121 of Choi does not overlay the layers 231 and 232 of the conducting channel comprising layers 130, 231 and 232. The examiner respectfully disagrees because claim 1 does not require the second region 121 overlying the entire conducting channel. It is clear that the Choi reference reads on the claim by having the second region 121 overlying a portion of the conducting channel.

Applicant also argues that the interconnection scheme of Choi is not camouflaged at all. Applicant's argument cannot replace evidence when evidence is necessary. The Choi reference provides the same structure as is claimed; therefore, if it is true in the present invention then it is also true in the Choi reference.

Allowable Subject Matter

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Claim 18 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thien F Tran whose telephone number is (703) 308-4108. The examiner can normally be reached on 8:00AM - 4:30PM Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

tt
August 23, 2002

Steven Lohr